

## ABSTRACT

Some embodiments provide a method of pre-computing routes for nets in a region of a circuit layout. The method initially defines a set of partitioning lines for partitioning the region into a plurality of sub-regions during a routing operation. The method then identifies a primary set of sub-regions that has more than one sub-region. It then determines whether the primary set of sub-regions is an open set that has a sub-region that is not adjacent to any other sub-region in the set. If the primary set of sub-regions is not an open set, the method identifies a route that connects the sub-regions in the primary set, and stores the identified route for the primary set of sub-regions. On the other hand, if the primary set of sub-regions is an open set, the method identifies a connection set of sub-regions that when combined with the primary set forms a closed set of sub-regions that (i) does not have any sub-region that is not adjacent to another sub-region in the closed set, and (ii) can be traversed by a minimum tree route that connects each sub-region in the connection set to at least two other sub-regions in the primary and connection sets of sub-regions. For the primary set of sub-regions, the method then stores at least either the connection set of sub-regions or the closed set of sub-regions.